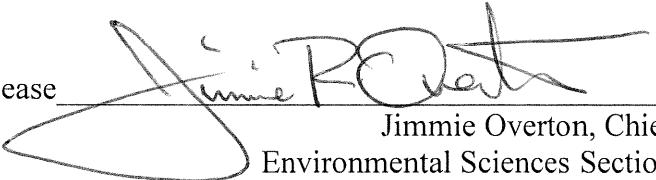


Standard Operating Procedures
for
The Algal Database Taxonomic Reference Table

North Carolina Department of the Environment and Natural Resources
Division of Water Quality
Environmental Sciences Section
March 2008 Version

This report has been approved for release


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This document is intended for use as a guide to procedures performed in the Environmental Sciences Section and is considered a working document and may have revisions and additions.

ECOSYSTEMS UNIT PROCEDURE COVER SHEET

SOP Name: The Algal Database Taxonomic Reference Table

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PURPOSE.

The purpose of this manual is to outline the standard operating procedures for maintaining the taxonomic reference table used in the NCDWQ Environmental Sciences algal database. A taxonomic reference table requires periodic maintenance to update nomenclature and add new taxa. It is the objective of this document to explain the structure of the table, the information that it contains and how to update the table. This manual is a supplement to the Standard Operating Procedures for Algae and Aquatic Plant Sampling and Analysis (NCDENR 2003).

1. INTRODUCTION

A taxonomic reference table, often called a “taxa list”, contains information on the algae that are known to be present in North Carolina waters. The table provides a uniform structure for algal identification and facilitates the translation of codes and counts into useable information for data analysis. The table is limited to phytoplankton at this time but it is designed to incorporate other forms of algae in the future.

2. TABLE STRUCTURE AND CONTENTS

The table contains four types of information: nomenclature, references, reference codes and cell volumes (Table 1).

Table 1. List of Information in the Taxonomic Reference Table.

Header	Definition
Algal Group	Division, phylum or family.
Group Common Name	The common name of the algal group (if applicable).
Algal Group Abbreviation	Abbreviation of the group common name.
Family	Taxonomic designation.
Genus	Taxonomic designation.
Species	Taxonomic designation.
Authority	Person who originally described the taxon.
Reference	Reference book that contains the description of the taxa including the page number.
TSN	Taxonomic serial numbers assigned by DWQ staff. They are a six digit sequence where the first two digits designate the group, the third and forth digits designate the genus and the fifth and sixth digits designate the species.
NADEDIDs	North American Diatom Ecological Database numeric codes used by the Academy of Natural Sciences of Philadelphia.
Cell Volume	The average volume (mm^3/m^3), commonly called biovolume, of the taxon used to estimate biomass.

2.1 Taxonomic Designation

The taxonomic designation of algae listed in the taxonomic reference table is based upon widely accepted botanical classification conventions as defined in two primary reference books. Algal groups are listed instead of phyla or divisions because “algae” is a collective term that refers to a number of loosely related organisms and not a formal classification convention. There are 10 algal groups included in the DWQ algal database (Table 2).

Table 2. The ten algal groups listed in the taxonomic reference table

Algal Group	Group Common Name	Algal Group Code
Bacillariophyceae	Diatoms	10
Chlorophyta	Greens	11
Chrysophyceae	Chrysomonads	12
Cryptophyta	Cryptomonads	13
Cyanobacteria	Blue greens	14
Ebriidea	Ebriidea*	15
Euglenophyta	Euglenoids	16
Prymnesiophyceae	Prymnesiophytes*	17
Pyrrhophyta	Dinoflagellates	18
Raphidophyceae	Raphidophytes*	19

* relatively small groups with no known common name

2.2. Taxonomic Reference Information

All taxa listed in the table must be fully referenced to allow verification and review. Reference information includes: the scientific literature (i.e. reference book) that has the description of the taxon; the page number containing the taxon description; and the authority (person who originally described the taxon).

The majority of the nomenclature follows two primary reference books; *Freshwater Algae of North America* (Wehr & Sheath 2003) and *Identifying Marine Phytoplankton* (Tomas et al. 1997). Secondary reference books, such as *A Manual of Fresh-Water Algae* (Whitford & Schumacher 1984) and *Studies on Brackish Water Phytoplankton* (Campbell 1973) are also used when they contain information not available in the primary references. A full list of references are listed in Standard Operating Procedures for Algal and Aquatic Plant Analysis (NCDENR 2003).

2.3. Taxonomic Serial Numbers (TSN's)

The table contains two versions of taxonomic serial numbers (DWQ TSN's and NADED numbers), also referred to as "reference codes" that are unique to a specific taxon. Codes are commonly used in place of scientific names to improve accuracy and efficiency in data entry, data storage and data retrieval. An abbreviated version of the taxon's scientific name (i.e. *Anacystis cyanea* = anac cya) was used previously by DWQ staff. However, abbreviations become problematic when multiple names are spelled similarly or when new codes have to be created to accommodate changes in nomenclature. Therefore, TSN's were developed to avoid these problems. The TSN's are in the form of a 6 digit sequence. The first two digits designate the algal group, such as diatom or green algae. The third and forth digits designate the genus. The fifth and sixth digits designate the species.

Example A. The TSN for *Anabaena spp.*

- The first two digits, the number 14, designate that it is a blue green alga.
- The third and fourth digits, the number 01, designate that it is the genus *Anabaena*.
- The fifth and sixth digits, the number 00, designates that it is an undetermined species of *Anabaena*.
- The completed TSN for *Anabaena spp.* is 140100.

Example B. The TSN for *Anabaena circinalis*.

- The first two digits, the number 14, designates that it is a blue green alga.
- The third and fourth digits, the number 01, designates that it is the genus *Anabaena*.
- The fifth and sixth digits, the number 02, designates that it is the species *A. circinalis*.
- The completed TSN for *Anabaena circinalis* is 140102.

2.3.1 Assigning Taxonomic Serial Numbers

The Environmental Science Section uses the following steps to assign new TSN's.

Assign a TSN to a new taxon beginning with the algal group's number (10 through 99). If the algal group has not been previously assigned a number, then use the next consecutive number after the last group number used. Use the two-digit genus code if one exists

(01 through 99). If the taxa is a new genus in the group, then use the next consecutive number after the last genus number used. Finally, use the next consecutive number after the last number used for a species in that genus (1 through 99). If the species has not been determined than use double zeros (00) to signify that the identity of the species is not known.

Example C. Assigning a TSN to the new taxon *Anabaena plantonica*

- The first two digits, the number 14, designate that it is a blue green alga
- The third and fourth digits, the number 01, designate that it is the genus *Anabaena*.
- The fifth and sixth digits, 04 (the next consecutive number after the *A. flos-aquae*), designate that it is the species *A. plantonica*
- The completed TSN for *Anabaena plantonica* is 140104

2.4. North American Diatom Ecological Database (NADED) Numbers

The North American Diatom Ecological Database Numbers (NADED #'s) are also listed in the table. The NADED numbers were originally created for a database on diatoms at the Academy of Natural Sciences. The database was later expanded to include all forms of algae. The NADED numbers listed on the table have been created by the Academy of Natural Sciences of Philadelphia and are used to integrate NCDWQ data with outside laboratories.

2.5. Cell Volume

Cell volumes, commonly called “biovolumes”, are used to roughly estimate algal biomass and provide an alternative way to expressing the quantity of algae present as opposed to unit or cell density. Cell volumes are determined by measuring the size of an algal cell and applying the measurements to the geometrical equation which best fits the algal cell shape. Cell volumes listed on the table have either been calculated by EU lab staff, obtained through literature or by consulting outside laboratories. The cell volumes listed are conservative and based upon the smallest measures or calculations so as to not overestimate biomass. The procedure to calculate the volume of an algal cell can be found in the in Standard Operating Procedures for Algal and Aquatic Plant Analysis (NCDENR 2003). The accuracy of cell volume measures are directly related to the

number of measurements taken. If the cell volume for a particular taxon is not known, then a zero (0) should be listed on the table. Cell volumes should be updated, if needed, as part of the annual review.

3. ANNUAL REVIEW

The taxonomic reference list should be reviewed by DWQ staff annually and updated, if needed, in beginning of the calendar year. Updates are required when nomenclature has changed, biovolume information has been recalculated or new taxa need to be added.

3.1 Adding Taxa

A taxon must have been identified more than once and verified by a second qualified taxonomist before it can be placed on the table. Rare, obscure or tentative identifications, even with outside consultation, should not be placed on the table. Under no circumstances should a taxon be placed on the table without the consultation of other DWQ taxonomists. The table should only contain taxa that are commonly found, easily referenced and relevant to the mission of the Environmental Sciences Section.

REFERENCES

- Campbell, Peter H. 1973. Studies on Brackish Water Phytoplankton. University of North Carolina, School of Public Health. Sea Grant Publication. UNC-SG-73-07.
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Appendix I. North Carolina Division of Water Quality Algal Taxonomic Reference Table. (reformatted for this document)

Algal Group	Common Name	Group Code	Family	Genus species	Authority	Reference	TSN	NADED	Cell Volume
Bacillariophyceae									
Diatom		BAC	Achnanthaceae	<i>Achnanthidium spp.</i>	Kützing	Wehr & Sheath, pg. 623	100200	1039	50
Diatom		BAC	Achnanthaceae	<i>Cocconeis spp.</i>	Ehrenberg	Wehr & Sheath, pg. 623	101100	16889	160
Diatom		BAC	Achnanthaceae	<i>Rhoicosphenia abbreviata</i>	(Agardh) Lange-Bertalot 1980	Wehr & Sheath, pg. 659	102601	57002	240
Diatom		BAC	Biddulphiaceae	<i>Acanthoceras zachariasii</i>	(Brun) Simonsen	Krammer-Lange Bertalot, pg. 389	100101	2502001	5
Diatom		BAC	Chaetocerotaceae	<i>Chaetoceros spp.</i>	Ehrenberg 1844	Tomas 1997, pg. 189	101000	15889	25
Diatom		BAC	Chaetocerotaceae	<i>Chaetoceros throndensisii</i>	Zingone	Tomas 1997, pg. 224	101001	15004	25
Diatom		BAC	Coscinodiscaceae	<i>Aulacoseira spp.</i>	Thwaites 1848	Wehr & Sheath, pg. 572	100800	10054	200
Diatom		BAC	Coscinodiscaceae	<i>Cyclotella spp.</i>	(Kutzing) Brebisson	Wehr & Sheath, pg. 581	101200	20889	80
Diatom		BAC	Coscinodiscaceae	<i>Melosira varians</i>	Agardh	Wehr & Sheath, pg. 576	102101	44073	2600
Diatom		BAC	Coscinodiscaceae	<i>Undetermined centric spp.</i>		Wehr & Sheath, pg. 559	103200	890995	140
Diatom		BAC	Cymbellaceae	<i>Amphora spp.</i>	Ehrenberg ex Kutzin 1844	Wehr & Sheath, pg. 663	100400	7889	100
Diatom		BAC	Cymbellaceae	<i>Cymbella spp.</i>	Agardh 1830	Wehr & Sheath, pg. 663	101400	23889	200
Diatom		BAC	Entomoneidaceae	<i>Amphipora spp.</i>	Peragallo	Tomas 1997, pg. 289	100300	5001	0
Diatom		BAC	Eunotiaceae	<i>Eunotia spp.</i>	Ehrenberg 1837	Wehr & Sheath, pg. 664	101600	33889	30
Diatom		BAC	Fragilariaeae	<i>Asterionella formosa</i>	Hassall 1850	Wehr & Sheath, pg. 607	100601	9001	550
Diatom		BAC	Fragilariaeae	<i>Asterionellopsis glacialis</i>	Castracane	Tomas, pg. 241	100701	8949001	400
Diatom		BAC	Fragilariaeae	<i>Biddulphia spp.</i>	Gray	Tomas 1997, pg. 168	100900	11005	140
Diatom		BAC	Fragilariaeae	<i>Dactyliosolen fragilissimus</i>	(Bergon) Hasle 1975	Tomas 1997, pg. 340	101501	2503001	0
Diatom		BAC	Fragilariaeae	<i>Fragilaria capucina</i>	Desmazieres 1925	Krammer-Lange Bertalot, pg. 121	101701	34006	100
Diatom		BAC	Fragilariaeae	<i>Fragilaria crotonensis</i>	Kitton 1869	Wehr & Sheath, pg. 613	101702	34017	160
Diatom		BAC	Fragilariaeae	<i>Fragilaria spp.</i>	Grun. 1885	Wehr & Sheath, pg. 613	101700	34889	100
Diatom		BAC	Fragilariaeae	<i>Rhizosolenia spp.</i>	Brightwell 1858	Tomas 1997, pg. 144	102500	56889	100
Diatom		BAC	Fragilariaeae	<i>Synedra spp.</i>	Ehrenberg	Wehr & Sheath, pg. 616	102800	66889	80
Diatom		BAC	Gomphonemaceae	<i>Gomphonema spp.</i>	Ehrenberg 1832	Wehr & Sheath, pg. 665	101800	37889	300
Diatom		BAC	Leptocylindrus	<i>Leptocylindrus danicus</i>	Cleve	Tomas 1997, pg. 95	102001	2504001	620

Algal Group	Common Name	Family Group	Code	Genus species	Authority	Reference	TSN	NAMED Cell Volume
Diatom		BAC	Leptocylindrus	<i>Leptocylindrus minimus</i>	Gran	Tomas 1997, pg. 95	102002	2504002
Diatom		BAC	Naviculaceae	<i>Anomooneis</i> spp.	Pfitzer 1871	Wehr & Sheath, pg. 641	100500	8889
Diatom		BAC	Naviculaceae	<i>Gyrosigma</i> spp.	Hassall 1845	Wehr & Sheath, pg. 648	101900	38889
Diatom		BAC	Naviculaceae	<i>Navicula</i> spp.	Bory 1822	Wehr & Sheath, pg. 649	102200	46889
Diatom		BAC	Nitzchiaceae	<i>Cylindrotheca closterium</i>	(Ehrenberg) Lewin & Reimann	Tomas, pg. 294	101300	48138
Diatom		BAC	Nitzchiaceae	<i>Nitzschia acicularis</i>	Smith	Wehr & Sheath, pg. 676	102301	48002
Diatom		BAC	Nitzchiaceae	<i>Nitzschia fruticosa</i>	Hustedt 1957	Krammer-Lange	102302	48253
Diatom		BAC	Nitzchiaceae	<i>Nitzschia longissima</i>	(Brebisson) Ralfs	Tomas, pg. 329	102303	130002
Diatom		BAC	Nitzchiaceae	<i>Nitzschia palea</i>	(Kützing) Smith	Wehr & Sheath, pg. 676	102304	48025
Diatom		BAC	Nitzchiaceae	<i>Nitzschia</i> spp.	Hassall	Wehr & Sheath, pg. 676	102300	48889
Diatom		BAC	Nitzchiaceae	<i>Pseudonitzchia pungea</i>	(Grunow ex Cleve) Hasle 1996	Tomas 1997, pg. 312	102401	49002
Diatom		BAC	Tabellariaceae	<i>Tabellaria fenestrata</i>	(Lyngb.) Kutz. 1844	Wehr & Sheath, pg. 617	102901	67002
Diatom		BAC	Tabellariaceae	<i>Tabellaria</i> spp.	(Ehrenberg) Kutz	Wehr & Sheath, pg. 617	102900	67889
Diatom		BAC	Thalassionemataceae	<i>Thalassionema nitzschoides</i>	(Grunow) Mereschkowsky	Tomas 1997, pg. 257	103001	69001
Diatom		BAC	Thalassiosiraceae	<i>Skelotonema costatum</i>	(Greville) Cleve	Tomas 1997, pg. 44	102701	60001
Diatom		BAC	Thalassiosiraceae	<i>Skelotonema potamos</i>	Greville 1865	Wehr & Sheath, pg. 585	102702	60002
Diatom		BAC	Thalassiosiraceae	<i>Thalassiosira nordenskioldii</i>	Cleve 1873	Tomas 1997, pg. 56	103101	70023
Chlorophyta								
Green Algae		CHL	Botryococcaceae	<i>Botryococcus braunii</i>	Kützing 1849	Prescott, pg. 232	110301	279000
Green Algae		CHL	Botryococcaceae	<i>Botryococcus sudeticus</i>	Lemmermann 1896a	Prescott, pg. 232	110302	279001
Green Algae		CHL	Chlamydomonadaceae	<i>Carteria</i> spp.	Diesing	Wehr & Sheath, pg. 234	110400	283889
Green Algae		CHL	Chlamydomonadaceae	<i>Chlamydomonas</i> spp.	Ehrenberg	Wehr & Sheath, pg. 234	110500	298889
Green Algae		CHL	Chlamydomonadaceae	<i>Chlorogonium</i> spp.	Ehrenberg	Wehr & Sheath, pg. 234	110700	302001

Algal Common Name Group	Family Code	Genus species	Authority	Reference	TSN	NAMED Cell Volume
Green Algae	CHL	Chlamydomonadaceae <i>Lobomonds rostrata</i>	Dangeard	Wehr & Sheath, pg. 235	112501	431001
Green Algae	CHL	Chlorococcaceae	(Chod.) Wille 1911	Wehr & Sheath, pg. 284	112101	397001
Green Algae	CHL	Chlorodendraceae	Butcher 1959	Tomas, pg. 654	114700	555001
Green Algae	CHL	Cocomyxaceae	<i>Tetraselmis maculata</i>	Prescott, pg. 93	111501	367000
Green Algae	CHL	Cocomyxaceae	<i>Elakatothrix gelatinosa</i>	Wille 1898	Naumann	600
Green Algae	CHL	Coccomyxaceae	<i>Nannochloris spp.</i>	Wehr & Sheath, pg. 291	112800	447001
Green Algae	CHL	Coelastraceae	<i>Coelastrium proboscideum</i>	Prescott, pg. 230	111001	321011
Green Algae	CHL	Coelastraceae	<i>Coelastrium reticulatum</i>	(Dang.) Senn 1899	Prescott, pg. 230	5
Green Algae	CHL	Coelastraceae	<i>Coelastrium sphaericum</i>	Nägeli 1849	Prescott, pg. 231	111003
Green Algae	CHL	Coelastraceae	<i>Coelastrium spp.</i>	Nägeli	Wehr & Sheath, pg. 374	111000
Green Algae	CHL	Desmidiaeae	<i>Coelastrium spp.</i>	Nitzsch ex Ralfs	Wehr & Sheath, pg. 372	110900
Green Algae	CHL	Desmidiaeae	<i>Coelastrium spp.</i>	Corda ex Ralfs	Wehr & Sheath, pg. 374	111000
Green Algae	CHL	Desmidiaeae	<i>Cosmarium spp.</i>	Ehrenberg ex Ralfs	Wehr & Sheath, pg. 375	111600
Green Algae	CHL	Desmidiaeae	<i>Euastrum spp.</i>	Ralfs	Wehr & Sheath, pg. 376	112700
Green Algae	CHL	Desmidiaeae	<i>Micrasterias spp.</i>	(Hansgirg) Compere	Wehr & Sheath, pg. 376	43888
Green Algae	CHL	Desmidiaeae	<i>Octacanthium spp.</i>	Meyen ex Ralfs	Wehr & Sheath, pg. 377	113100
Green Algae	CHL	Desmidiaeae	<i>Staurastrum spp.</i>	Meyen 1829	Prescott, pg. 222	453001
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum biradiatum</i>	(Turp.) Meneghini 1840	Prescott, pg. 222	538889
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum boryanum</i>	Meyen 1829	Prescott, pg. 223	113401
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum duplex</i>	(Meyen) Lemmermann 1897	Prescott, pg. 227	467001
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum simplex</i>	(Meyen) Lemmermann 1897	Prescott, pg. 254	130
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum spp.</i>	Meyen	Wehr & Sheath, pg. 295	113400
Green Algae	CHL	Hydrodictyaceae	<i>Pediastrum tetras</i>	(Ehrenb.) Ralfs 1844	Prescott, pg. 227	467002
Green Algae	CHL	Oocystaceae	<i>Ankistrodesmus falcatus</i>	(Corda) Ralfs 1848	Prescott, pg. 253	110201
Green Algae	CHL	Oocystaceae	<i>Ankistrodesmus fusiformis</i>	Corda "sensu" Korsch. pg. 325	Whitford & Schumacher, 110202	261000
Green Algae	CHL	Oocystaceae	<i>Ankistrodesmus spiriliformis</i>	(Turner) Lemmermann 1908	Prescott, pg. 254	30
Green Algae	CHL	Oocystaceae	<i>Chlorella elipsoida</i>	Gerneck 1907	Prescott, pg. 236	110601
Green Algae	CHL	Oocystaceae	<i>Chlorella spp.</i>	Beijerinck	Wehr & Sheath, pg. 271	110600

Algal Common Name Group	Family Code	Genus species	Authority	Reference	TSN	NADeD	Cell Volume	
Green Algae	CHL	Oocystaceae	<i>Cladotriopsis longissima</i> Lemmermann 1899a	Prescott, pg. 255	110801	315000	800	
Green Algae	CHL	Oocystaceae	<i>Dicytosphaerium ehrenbergianum</i> Nägeli 1849	Prescott, pg. 238	111301	350000	5	
Green Algae	CHL	Oocystaceae	<i>Dicytosphaerium pulchellum</i> Wood 1874	Prescott, pg. 238	111302	350001	30	
Green Algae	CHL	Oocystaceae	<i>Dimorphococcus lunatus</i> A. Braun 1855	Wehr & Sheath, pg. 280	111401	351001	8	
Green Algae	CHL	Oocystaceae	<i>Franceia spp.</i>	Lemmermann	Wehr & Sheath, pg. 284	111800	385003	20
Green Algae	CHL	Oocystaceae	<i>Kirchneriella contorta</i>	(Schmidle) Bohlin 1897	Prescott, pg. 258	112301	424004	2
Green Algae	CHL	Oocystaceae	<i>Kirchneriella lunaris</i>	(Kirch.) Moebius 1894	Prescott, pg. 258	112302	424001	8
Green Algae	CHL	Oocystaceae	<i>Kirchneriella obesa</i>	(W. West) Schmidle 1893	Prescott, pg. 259	112303	424002	5
Green Algae	CHL	Oocystaceae	<i>Kirchneriella species</i>	Schmidle	Wehr & Sheath, pg. 288	112304	424000	10
Green Algae	CHL	Oocystaceae	<i>Kirchneriella subsolitaria</i>	G.S. West 1908	Prescott, pg. 259	112305	424003	8
Green Algae	CHL	Oocystaceae	<i>Langerheimia spp.</i>	Chodat	Wehr & Sheath, pg. 288	112400	426009	30
Green Algae	CHL	Oocystaceae	<i>Nephrocytum agariphianum</i>	Nägeli 1894	Prescott, pg. 248	112901	448002	70
Green Algae	CHL	Oocystaceae	<i>Nephrocytum spp.</i>	Nägeli 1894	Wehr & Sheath, pg. 291	112900	448113	400
Green Algae	CHL	Oocystaceae	<i>Oocystis parva</i>	West & West 1898	Prescott, pg. 246	113201	458006	60
Green Algae	CHL	Oocystaceae	<i>Oocystis pusilla</i>	Hansgirg 1890	Prescott, pg. 246	113202	458005	60
Green Algae	CHL	Oocystaceae	<i>Oocystis spp.</i>	A. Braun	Wehr & Sheath, pg. 291	113200	458889	900
Green Algae	CHL	Oocystaceae	<i>Polyedriopsis spinulososa</i>	Schmidle 1900a	Wehr & Sheath, pg. 298	113600	486000	0
Green Algae	CHL	Oocystaceae	<i>Quadrigula spp.</i>	Printz	Wehr & Sheath, pg. 298	113800	500889	20
Green Algae	CHL	Oocystaceae	<i>Schroederia setigera</i>	Lemmermann	Wehr & Sheath, pg. 301	114001	517000	20
Green Algae	CHL	Oocystaceae	<i>Selenastrum bibraciatum</i>	Reinsch 1867	Prescott, pg. 256	114101	518003	70
Green Algae	CHL	Oocystaceae	<i>Selenastrum minutum</i>	(Näg.) Collins 1909	Prescott, pg. 257	114102	518000	10
Green Algae	CHL	Oocystaceae	<i>Selenastrum spp.</i>	Reinsch	Wehr & Sheath, pg. 301	114100	518889	10
Green Algae	CHL	Oocystaceae	<i>Tetraedron arthrodesmiforme</i> (G.S. West) Woloszynska	Prescott, pg. 262	114601	553020	30	
			1914					
Green Algae	CHL	Oocystaceae	<i>Tetraedron caudatum</i>	(Corda) Hansgirg 1888a	Prescott, pg. 263	114602	553005	40
Green Algae	CHL	Oocystaceae	<i>Tetraedron gracile</i>	(Reinsch) Hansgirg 1889	Prescott, pg. 265	114603	553008	500
Green Algae	CHL	Oocystaceae	<i>Tetraedron incus</i>	(Teiliig) G.M. Smith	Tiffany, pg. 63	114604	553021	40
Green Algae	CHL	Oocystaceae	<i>Tetraedron minimum</i>	(A. Braun) Hansgirg 1888a	Prescott, pg. 267	114605	553002	30
Green Algae	CHL	Oocystaceae	<i>Tetraedron muticum</i>	(A. Braun) Hansgirg 1888a	Prescott, pg. 267	114606	553003	30

Algal Group	Common Name	Family	Genus species	Authority	Reference	TSN	NADED	Cell Volume
Group Code								
Green Algae		Oocystaceae	<i>Tetraedron</i> spp.	Kützing	Wehr & Sheath, pg. 303	114600	553889	40
Green Algae		Oocystaceae	<i>Tetraedron trigonum</i>	(Näeg.) Hansgirg 1888a	Prescott, pg. 270	114607	553000	40
Green Algae		Oocystaceae	<i>Treubaria seigerum</i>	(Archer) G.M. Smith 1933	Prescott, pg. 242	115001	564002	30
Green Algae		Oocystaceae	<i>Westella boryoides</i>	de Wildemann	Wehr & Sheath, pg. 306	115201	578000	60
Green Algae		Palmellaceae	<i>Gloeocystis</i> spp.	Nägeli	Wehr & Sheath, pg. 284	112000	389889	30
Green Algae		Palmellaceae	<i>Sphaerocystis</i> spp.	Chodat 1897	Wehr & Sheath, pg. 301	114300	528889	60
Green Algae		Phacotaceae	<i>Phacotus</i> spp.	Perty	Wehr & Sheath, pg. 238	113500	471001	300
Green Algae		Phacotaceae	<i>Pteromonas</i> spp.	Seligo	Wehr & Sheath, pg. 238	113700	496889	0
Green Algae		Polyblepharidies	<i>Spermatozoopsis exultans</i>	Korshikov	Wehr & Sheath, pg. 230	114201	525001	10
Green Algae		Prasinophyceae	<i>Nephroselmis olivacea</i>	Stein	Wehr & Sheath, pg. 228	113001	449001	220
Green Algae		Prasinophyceae	<i>Nephroselmis</i> species	Stein	Tomas, pg. 653	113000	449002	30
Green Algae		Scenedesmaceae	<i>Actinastrum hantzschii</i>	Lagerheim 1882	Prescott, pg. 281	110101	250000	10
Green Algae		Scenedesmaceae	<i>Crucigenia apiculata</i>	(Lemm.) Schmidle 1901	Prescott, pg. 283	111201	328044	20
Green Algae		Scenedesmaceae	<i>Crucigenia crucifera</i>	(Wolle) Collins 1909	Prescott, pg. 284	111202	328001	20
Green Algae		Scenedesmaceae	<i>Crucigenia fenestrata</i>	Schmidle 1901	Prescott, pg. 284	111203	328007	20
Green Algae		Scenedesmaceae	<i>Crucigenia irregularis</i>	Wille 1898	Prescott, pg. 284	111204	328008	20
Green Algae		Scenedesmaceae	<i>Crucigenia quadrata</i>	Morren 1830	Prescott, pg. 284	111205	328000	20
Green Algae		Scenedesmaceae	<i>Crucigenia tetrapedia</i>	(Kirch.) West & West 1902	Prescott, pg. 285	111206	328002	20
Green Algae		Scenedesmaceae	<i>Gloeaactinium laebergerianum</i>	Hansgirg 1890	Prescott, pg. 248	111901	392001	210
Green Algae		Scenedesmaceae	<i>Gloeaactinium limneticum</i>	Hansgirg	Wehr & Sheath, pg. 284	111902	392002	6
Green Algae		Scenedesmaceae	<i>Micractinium pusillum</i>	Fresenius 1858	Wehr & Sheath, pg. 288	112601	437000	30
Green Algae		Scenedesmaceae	<i>Scenedesmus abundans</i>	(Kirch.) Chodat 1913	Prescott, pg. 274	113901	510012	50
Green Algae		Scenedesmaceae	<i>Scenedesmus acuminatus</i>	(Lag.) Chodat 1902	Prescott, pg. 275	113902	510006	50
Green Algae		Scenedesmaceae	<i>Scenedesmus bicaudatus</i>	(Hansg.) Chodat, pg. 325	Whitford & Schumacher, 113903	510007	50	
Green Algae		Scenedesmaceae	<i>Scenedesmus bijuga</i>	(Turp.) Lagerheim 1893	Prescott, pg. 276	113904	510013	50
Green Algae		Scenedesmaceae	<i>Scenedesmus obliquus</i>	(Turp.) Kuetzing 1833	Prescott, pg. 279	113905	510015	50

Algal Group	Common Name	Family Code	Genus species	Authority	Reference	TSN	NADED	Cell Volume
Green Algae		CHL	Scenedesmaceae	<i>Scenedesmus producto-capitatus</i>	Schmula	Whitford & Schumacher, 113906	510145	50
Green Algae		CHL	Scenedesmaceae	<i>Scenedesmus quadricauda</i>	(Turp.) de Brebisson pg. 53	Prescott, pg. 280	113907	510001
Green Algae		CHL	Scenedesmaceae	<i>Scenedesmus spp.</i>	Meyen	Wehr & Sheath, pg. 298	113900	510889
Green Algae		CHL	Scenedesmaceae	<i>Tetrastrum elegans</i>	Playfair	Dillard, pg. 105	114901	557003
Green Algae		CHL	Scenedesmaceae	<i>Tetrastrum glabrum</i>	(Roll) Ahlstrom & Tiffany pg. 55	Whitford & Schumacher, 114902	557004	10
Green Algae		CHL	Scenedesmaceae	<i>Tetrastrum heterocanthum</i>	(Norst.) Chodat	Whitford & Schumacher, 114903	557001	5
Green Algae		CHL	Tetrasporaceae	<i>Tetraspora spp.</i>	Link	Wehr & Sheath, pg. 303	114800	556889
Green Algae		CHL	Volvocaceae	<i>Eudorina elegans</i>	Ehrenberg 1832b	Wehr & Sheath, pg. 239	111701	380000
Green Algae		CHL	Volvocaceae	<i>Eudorina spp.</i>	Ehrenberg	Wehr & Sheath, pg. 239	111700	380001
Green Algae		CHL	Volvocaceae	<i>Gonium pectorale</i>	Müeller 1773	Wehr & Sheath, pg. 243	112201	402000
Green Algae		CHL	Volvocaceae	<i>Pandorina morum</i>	Coleman 1959	Wehr & Sheath, pg. 241	113301	464000
Green Algae		CHL	Volvocaceae	<i>Pandorina spp.</i>	Bory de St. Vincent	Wehr & Sheath, pg. 241	113300	464001
Green Algae		CHL	Volvocaceae	<i>Tetrahema spp.</i>	Fromentel	Wehr & Sheath, pg. 245	114500	550001
Green Algae		CHL	Volvocaceae	<i>Volvox spp.</i>	Linnaeus	Wehr & Sheath, pg. 241	115100	575001
Chrysophyceae			Centrtrictaceae	<i>Centrtrictus spp.</i>	Lemmermann 1900	Wehr & Sheath, pg. 458	120200	1020000
Chrysomonads		CHR	Chlorotheciaceae	<i>Ophiocytium capitatum</i>	Wolle 1887	Prescott, pg. 363	121001	1160000
Chrysomonads		CHR	Chrysococcaceae	<i>Paulinella ovalis</i>	(Wulff) Johnson et al.	Tomas, pg. 619	121101	1172001
Chrysomonads		CHR	Craspedomonadaceae	<i>Desmarella moniliformis</i>	Kent	Huber-Pestalozzi, pg. 290	120601	1111001
Chrysomonads		CHR	Dictyochophyceae	<i>Pseudopedinella pyriforme</i>	Carter 1937	Tomas 1997, pg. 623	121201	1187001
Chrysomonads		CHR	Euchromulinaceae	<i>Chromulina spp.</i>	Clenkowsky 1870	Wehr & Sheath, pg. 496	120400	1037002
Chrysomonads		CHR	Euchromulinaceae	<i>Chrysosoccus refescens</i>	Klebs	Huber-Pestalozzi, pg. 60	120501	1055001
Chrysomonads		CHR	Euchromulinaceae	<i>Chrysosoccus spp.</i>	Klebs	Wehr & Sheath, pg. 496	120500	1055889
Chrysomonads		CHR	Mallomonadaceae	<i>Mallomonas acaroides</i>	Perty 1852	Prescott, pg. 371	120801	1145004
Chrysomonads		CHR	Mallomonadaceae	<i>Mallomonas akrokomos</i>	Ruttner	Whitford & Schumacher, pg. 330	120802	1145011

Algal Common Name	Group	Family	Genus species	Authority	Reference	TSN	NADeD	Cell Volume
Chrysomonads	CHR	Mallomonadaceae	<i>Mallomonas alpina</i>	Pascher & Ruttner	Whitford & Schumacher, 120803	1145012	180	
Chrysomonads	CHR	Mallomonadaceae	<i>Mallomonas caudata</i>	Iwanoff 1899 (1900a)	Prescott, pg. 372	120804	1145001	880
Chrysomonads	CHR	Mallomonadaceae	<i>Mallomonas spp.</i>	Perty	Wehr & Sheath, pg. 548	120800	1145889	780
Chrysomonads	CHR	Ochromonadaceae	<i>Dinobryon bavaricum</i>	Imhof 1890	Prescott, pg. 377	120701	1110005	75
Chrysomonads	CHR	Ochromonadaceae	<i>Dinobryon divergens</i>	Imhof 1887	Prescott, pg. 378	120702	1110007	75
Chrysomonads	CHR	Ochromonadaceae	<i>Dinobryon spp.</i>	Ehrenberg	Wehr & Sheath, pg. 498	120700	1110889	75
Chrysomonads	CHR	Ochromonadaceae	<i>Ochromonas spp.</i>	Wyssotzki	Wehr & Sheath, pg. 499	120900	1158889	60
Chrysomonads	CHR	Ochromonadaceae	<i>Uroglenopsis americana</i>	(Calkins) Lemmermann 1899a	Wehr & Sheath, pg 503	121501	1217001	10
Chrysomonads	CHR	Raphidophyceae	<i>Chattonella spp.</i>	Biecheler 1936	Tomas 1997, pg. 615	120300	1025001	3140
Chrysomonads	CHR	Sarcinochrysidales	<i>Apedinella radians</i>	(Thronsdæn) Thronsdæn 1971	Tomas 1997, pg. 623	120101	1008001	180
Synuraceae	CHR	Synuraceae	<i>Synura spp.</i>	Ehrenberg	Wehr & Sheath, pg. 548	121300	1205889	400
Synuraceae	CHR	Synuraceae	<i>Synura wrella</i>	Ehrenberg 1838	Prescott, pg. 376	121301	1205001	400
Synuraceae	CHR	Tribonemataceae	<i>Tribonema species</i>	Derbes & Solier	Whitford & Schumacher, 121400	121200	130	
				pg. 92				
Cryptophyta								
Cryptomonads	CRY	Cryptomonadeae	<i>Campylomonas reflexa</i>	Hill 1991	Wehr & Sheath, pg. 745	130101	126001	680
Cryptomonads	CRY	Cryptomonadeae	<i>Chroomonas spp.</i>	Hansgig	Wehr & Sheath, pg. 747	130200	1261002	250
Cryptomonads	CRY	Cryptomonadeae	<i>Cryptomonas erosa</i>	Ehrenberg 1838	Wehr & Sheath, pg. 745	130301	1265004	680
Cryptomonads	CRY	Cryptomonadeae	<i>Cryptomonas ovata</i>	Ehrenberg 1838	Campbell, pg. 114	130302	1265003	1880
Cryptomonads	CRY	Cryptomonadeae	<i>Cryptomonas rostellata</i>	Lucas 1968	Campbell, pg. 111	130303	1265014	140
Cryptomonads	CRY	Cryptomonadeae	<i>Cryptomonas spp.</i>	Ehrenberg 1838	Wehr & Sheath, pg. 744	130300	1265889	1300
Cryptomonads	CRY	Cryptomonadeae	<i>Komma caudata</i>	Hill 1990	Wher & Sheath, pg. 747	130401	1272001	100
Cryptomonads	CRY	Cryptomonadeae	<i>Teleaulax amphioxiae</i>	(Conrad) Hill	Tomas, pg. 608	130501	1294001	200
Cyanobacteria								
Blue Green Algae CYA		Chroococcaceae	<i>Chroococcus dispersus</i>	(Keissl.) Lemmermann 1904	Prescott, pg. 447	140601	820003	0.5
Blue Green Algae CYA		Chroococcaceae	<i>Chroococcus limneticus</i>	Lemmermann 1898d	Prescott, pg. 448	140602	820005	4

Algal Group	Common Name	Family	Genus species	Authority	Reference	TSN	NADeD	Cell Volume
Blue Green Algae	CYA	Chroococcaceae	<i>Chroococcus minutus</i>	(Kütz.) Nägeli 1849	Prescott, pg. 449	140603	820004	4
Blue Green Algae	CYA	Chroococcaceae	<i>Chroococcus spp.</i>	Nägeli 1849	Wehr & Sheath, pg. 95	140600	820889	0.5
Blue Green Algae	CYA	Chroococcaceae	<i>Chroococcus turgidus</i>	(Kütz.) Nägeli 1849	Prescott, pg. 450	140604	820007	9
Blue Green Algae	CYA	Merismopediaceae	<i>Aphanocapsa delicatissima</i>	West & West 1912	Prescott, pg. 453	140401	807004	0.05
Blue Green Algae	CYA	Merismopediaceae	<i>Aphanocapsa elachista</i>	West & West 1895b	Prescott, pg. 453	140402	807003	2
Blue Green Algae	CYA	Merismopediaceae	<i>Aphanocapsa incerta</i>	Smith 1920	Wehr & Sheath, pg. 82	140403	807011	0.5
Blue Green Algae	CYA	Merismopediaceae	<i>Aphanocapsa pulchra</i>	(Kütz.) Rabenhorst 1865	Prescott, pg. 454	140404	807000	0.4
Blue Green Algae	CYA	Merismopediaceae	<i>Gomphosphaeria spp.</i>	Kützing 1883	Wehr & Sheath, pg. 87	140800	846889	4
Blue Green Algae	CYA	Merismopediaceae	<i>Merismopedia punctata</i>	Meyen 1839	Prescott, pg. 459	141101	875002	2
Blue Green Algae	CYA	Merismopediaceae	<i>Merismopedia tenuissima</i>	Lemmernmann 1898d	Prescott, pg. 459	141102	875000	0.5
Blue Green Algae	CYA	Merismopediaceae	<i>Woronichinia naegeliana</i>	Smith 1950	Wehr & Sheath, pg. 89	142001	945002	0.5
Blue Green Algae	CYA	Microcytaceae	<i>Microcytis aeruginosa</i>	Teilung 1941	Wehr & Sheath, pg. 92	141201	879000	30
Blue Green Algae	CYA	Microcytaceae	<i>Microcytis firma</i>	(Kützing) Lemmermann	Wehr & Sheath, pg. 192	141202	879016	0.1
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena aphanizomenoides</i> Forti	Huber-Pestalozzi, pg. 204	Huber-Pestalozzi, pg. 204	140101	803033	10
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena circinalis</i>	Rabenhorst 1852	Prescott, pg. 514	140102	803088	65
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena flos-aquae</i>	(Lyngb.) De Bresson 1836	Prescott, pg. 515	140103	803005	65
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena plantonica</i>	Brunnthal 1903	Prescott, pg. 517	140104	803034	100
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena spiroides</i>	Klebahn 1895	Prescott, pg. 518	140105	803023	65
Blue Green Algae	CYA	Nostocaceae	<i>Anabaena spp.</i>	(Bory) Flahault	Wehr & Sheath, pg. 169	140100	803001	50
Blue Green Algae	CYA	Nostocaceae	<i>Anabaenopsis circularis</i>	(Woloszynska) Miller 1923	Wehr & Sheath, pg. 171	140201	904002	30
Blue Green Algae	CYA	Nostocaceae	<i>Aphanizomenon flos-aquae</i>	(L.) Ralfs 1850	Wehr & Sheath, pg. 171	140301	806006	35
Blue Green Algae	CYA	Nostocaceae	<i>Aphanizomenon spp.</i>	Horecka & Komárek 1979	Wehr & Sheath, pg. 173	140701	806008	14
Blue Green Algae	CYA	Nostocaceae	<i>Cylindrospermopsis raciborskii</i>	(Koczwara) Gietler	Wehr & Sheath, pg. 129	141700	911001	2
Blue Green Algae	CYA	Oscillatoriaceae	<i>Romeria spp.</i>	Anagnostidis et Komárek	Wehr & Sheath, pg. 132	140900	863889	2
Blue Green Algae	CYA	Oscillatoriaceae	<i>Leptolyngbya spp.</i>	Agardh ex Gomont	Wehr & Sheath, pg. 151	141000	860889	25

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Blue Green Algae CYA	Oscillatoriaceae		<i>Oscillatoria spp.</i>	Vaucher ex Gomont	Wehr & Sheath, pg. 155	141300	888889	25
Blue Green Algae CYA	Oscillatoriaceae		<i>Planktothrixbya undulata</i>	Komárek & Kling 1991	Wehr & Sheath, pg. 135	141401	889004	1
Blue Green Algae CYA	Oscillatoriaceae		<i>Pseudanabaena spp.</i>	Lauterborn	Wehr & Sheath, pg. 129	141500	897889	10
Blue Green Algae CYA	Oscillatoriaceae		<i>Spirulina spp.</i>	Turpin 1827	Wehr & Sheath, pg. 132	141800	906889	60
Blue Green Algae CYA	Oscillatoriaceae		<i>Undetermined cyanophyte pseudofilamentous</i>			141900	948056	0.4
Blue Green Algae CYA	Rivularaceae		<i>Raphidiopsis spp.</i>	(Fritsch) Rich	Wehr & Sheath, pg. 180	141600	898000	11
Blue Green Algae CYA	Synechococcaceae		<i>Aphanothecce clathrata</i>	G.S. West 1906	Prescott, pg. 467	140501	808008	0.05
Blue Green Algae CYA	Synechococcaceae		<i>Aphanothecce saxicola</i>	Nägeli 1845	Prescott, pg. 468	140502	808001	2
Blue Green Algae CYA	Synechococcaceae		<i>Aphanothecce stagnina</i>	(Spreng.) A. Braun 1864-69	Prescott, pg. 469	140503	808007	10
Ebriidae	Ebriidea	EBR	<i>Ebria spp.</i>	Borgert 1891	Tomas 1997, pg. 685	150100	1100001	1900
Ebriidae	Ebriidea	EBR	<i>Hermeium adriaticum</i>	Zacharias 1906	Tomas, pg. 685	150101	1119001	1900
Euglenophyta								
Euglenoids	EUG	Euglenaceae	<i>Euglena spp.</i>	Ehrenberg 1830	Wehr & Sheath, pg. 412	160100	970889	2600
Euglenoids	EUG	Euglenaceae	<i>Lepocinclis spp.</i>	Perty 1849	Wehr & Sheath, pg. 413	160300	984889	1200
Euglenoids	EUG	Euglenaceae	<i>Phacus spp.</i>	Dujardin 1841	Wehr & Sheath, pg. 413	160400	990889	1200
Euglenoids	EUG	Euglenaceae	<i>Trachelomonas spp.</i>	Ehrenberg 1833	Wehr & Sheath, pg. 414	160500	995889	2300
Euglenoids	EUG	Euglenaceae	<i>Trachelomonas volvocina</i>	Ehrenberg 1833	Prescott, pg. 419	160501	995009	1400
Euglenoids	EUG	Eutreptiaceae	<i>Eurepita spp.</i>	Perty 1852	Wehr & Sheath, pg. 413	160200	974001	1480
Prymnesiophyceae								
Prymnesiophytes PRY	Prymnesiophyceae		<i>Chrysochromulina spp.</i>	Lacky	Wehr & Sheath, pg. 515	170100	1052002	520
Prymnesiophytes PRY	Prymnesiophyceae		<i>Chrysochromulina parva</i>	Lacky	Wehr & Sheath, pg. 515	170101	1052001	20
Prymnesiophytes PRY	Prymnesiophyceae		<i>Pyramimonas spp.</i>	Schmareda 1850	Tomas, pg. 655	170200	497889	25
Pyrrophyta								
Dinoflagellates DIN	Ceratiaceae		<i>Ceratium brachyceros</i>	Daday 1907	Wehr & Sheath, pg. 707	180202	1334003	11000
Dinoflagellates DIN	Ceratiaceae		<i>Ceratium hirundinella</i>	(O.F. Muell.) Dujardin 1841	Prescott, pg. 437	180203	1334000	5500

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Dinoflagellates	DIN	Ceratiaceae	<i>Ceratium spp.</i>	Schrank	Wehr & Sheath, pg. 707	180200	1334004	5500
Dinoflagellates	DIN	Glenodiniaceae	<i>Glenodinium danicum</i>	Paulsen 1907	Campbell, pg. 170	180301	1396009	590
Dinoflagellates	DIN	Glenodiniaceae	<i>Peridiniella danica</i>	(Paulsen) Okolodkov & Dodge	Eur. J. Phycol. Vol. 30, pg. 299	180901	1455001	600
Dinoflagellates	DIN	Glenodiniaceae	<i>Peridiniopsis polonicum</i>	(Woloszynska) Bourrelly 1968	Popovsky & Pfister, pg. 193	181002	1456003	5200
Dinoflagellates	DIN	Glenodiniaceae	<i>Peridiniopsis quadrifrons</i>	(Thompson) Bourrelly 1968	Popovsky & Pfister, pg. 195	181003	1456005	5200
Dinoflagellates	DIN	Gymnodiniaceae	<i>Akashivo sanguinea</i>	(Hirasaka) G. Hansen & Moestrup	Phycologia vol. 39 (2000), pg. 308	180101	1406013	3200
Dinoflagellates	DIN	Gymnodiniaceae	<i>Gymnodinium spp.</i>	Stein	Wehr & Sheath, pg. 706	180400	1406889	400
Dinoflagellates	DIN	Gymnodiniaceae	<i>Gymnodinium subroseum</i>	Campbell sp. nov.	Campbell, pg. 138	180401	1406014	80
Dinoflagellates	DIN	Gymnodiniaceae	<i>Gyrodinium instriatum</i>	Freudenthal & Lee	Tomas, pg. 452	180501	1408001	7500
Dinoflagellates	DIN	Gymnodiniaceae	<i>Gyrodinium spp.</i>	Kofoid & Swezy 1921	Tomas, pg. 451	180500	1408889	720
Dinoflagellates	DIN	Gymnodiniaceae	<i>Heterocapsa rotundata</i>	Hansen 1989	Tomas, pg. 455	180601	1418001	240
Dinoflagellates	DIN	Gymnodiniaceae	<i>Karlodinium micrum</i>	(Leadbeater & Dodge)	Daubjerg et al. 2000, pg. 309	180701	1425001	140
Dinoflagellates	DIN	Peridiniaceae	<i>Heterocapsa triquetra</i>	Larsen (Ehrenberg) Stein 1883	Tomas, pg. 531	180600	1418002	3020
Dinoflagellates	DIN	Peridiniaceae	<i>Peridiniopsis penardii</i>	(Lemmermann) Bourrelly 1968	Popovsky & Pfister, pg. 201	181001	1456002	8200
Dinoflagellates	DIN	Peridiniaceae	<i>Peridinium aciculiferum</i>	Lemmermann 1900	Campbell, pg. 174	181101	1457014	470
Dinoflagellates	DIN	Peridiniaceae	<i>Peridinium inconspicuum</i>	Lemmermann 1900	Prescott, pg. 433	181102	1457003	3700
Dinoflagellates	DIN	Peridiniaceae	<i>Peridinium pusillum</i>	(Penard) Lemmermann 1901d	Prescott, pg. 434	181103	1457008	1850
Dinoflagellates	DIN	Peridiniaceae	<i>Peridinium spp.</i>	Ehrenberg	Wehr & Sheath, pg. 707	181100	1457889	4500
Dinoflagellates	DIN	Peridiniaceae	<i>Peridinium wisconsinense</i>	Eddy 1930	Prescott, pg. 435	181104	1457007	9000
Dinoflagellates	DIN	Peridiniaceae	<i>Scirpsisella trochoidea</i>	(Stein) Loeblich 1976	Tomas, pg. 527	181501	1472001	690
Dinoflagellate	DIN	Pfiesteriaceae	<i>Pfiesteria species</i>	Steidinger & Burkholder	J. Phycol. vol. 32, pg. 157	181200	1460001	0
Dinoflagellates	DIN	Polyrikaceae	<i>Polyrikos species</i>	Butschli	Tomas, pg. 457	181300	1463001	7500
Dinoflagellates	DIN	Protocentraceae	<i>Prorocentrum micans</i>	Ehrenberg 1833	Tomas, pg. 424	181401	1466002	400

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Dinoflagellates	DIN	Prorocentraceae	<i>Prorocentrum minimum</i>	(Pavillard) Schiller 1933	Campbell, pg. 118	181402	1466001	470
Dinoflagellates	DIN	uncertain	<i>Oxyrrhis marina</i>	Dujardin 1841	Tomas, pg. 551	180801	1445001	3180
Raphidophyceae								
Raphidophytes	RAP	Raphidophyceae	<i>Gonyostomum spp.</i>	Diesing	Wehr & Sheath, pg. 428	190100	405889	12000
Raphidophyte	RAP	Raphidophyceae	<i>Heterosigma species</i>	Hada	Tomas, pg. 614	190200	1123001	90